

GALAPAGOS LACE BUGS: ZOOGEOGRAPHIC NOTES AND A NEW
SPECIES OF PHATNOMA (HEMIPTERA: TINGIDAE)

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ABSTRACT—Including the present new species, *Phatnoma biordinatum*, the Galápagos Archipelago has 5 species of lace bugs, all endemic, in 2 widespread genera: *Corythaica* known only from the New World, and the pan-tropical *Phatnoma*. Apparently a minimum of 3 invasions from South America account for these 5 species.

The current emphasis on research in the Galápagos Archipelago demands awareness and knowledge of all forms existing thereon. Specimens of 2 species of lace bugs kindly supplied by Dr. Robert Silberglied furnish part of the information offered here as a supplement to the Drake and Froeschner (1967) synopsis of the lace bugs of the Galápagos and prompt some remarks on the zoogeography of the family on those islands. With the kind consent of Dr. Silberglied, the holotype of the new species described herein is deposited in the national insect collection in the United States National Museum of Natural History.

The family Tingidae is now known to be represented on the Galápagos Islands by 5 species, all endemic, in the widely ranging genera *Corythaica* and *Phatnoma*. The absence of endemic lace bug genera conforms to Usinger and Ashlock's (1966) statement that a lygaeid genus "is the only endemic heteropterous generic unit in the islands." The presence of so few species of lace bugs (verification needed because collecting of Tingidae requires special methods) on these oceanic volcanic islands in contrast to the rich fauna of Central and South America may well be due to the 600 or more miles of ocean isolating them from the mainland, but the inhospitable arid conditions on the islands could have contributed to the poverty of this fauna by preventing establishment of other tropical American forms which might have managed to survive the intervening ocean. As explained below, the present lace bug fauna on the Galápagos apparently resulted from a minimum of 3 invasions from tropical America, a region that has long been recognized as the source of a large part of the animal fauna of the Galápagos.

Genus *Corythaica* Stål

The genus *Corythaica* is wholly American, ranging from the southern United States south through Central America and the West Indies to Argentina in South America. Thus the founding stock from

which the Galápagos *Corythaica* arose had to invade from somewhere along the western shores of the Americas, perhaps transported on ocean-carried drift floated on known favorable currents from either the Gulf of Panamá or from the coast of Peru.

The genus contains 3 Galápagos species of which 2, *C. cytharina* (Butler) and *C. wolfiana* Drake and Froeschner, are very similar to each other and to *C. costata* (Gibson) from Peru, Ecuador and Colombia. These 3 share the significant features of the ancestral uniseriate hypocoastal lamina and the following 3 derived characters: the elevated inner limiting vein of the discoidal area, the somewhat tumidly swollen outer limiting vein of the discoidal area, and the paranotum being concave anterolaterally as a result of a broad, angular projection opposite the humerus; they quite probably had a common ancestor and the 2 very similar endemic Galápagos species easily could have descended from a single invasion by that stock. In contrast, the third Galápagos species, *C. darwiniana* Drake and Froeschner, while agreeing with the above trio on the first 3 features, has the paranotal outline broadly convex and so represents another part of the genus whose other species, *C. cucullata* (Berg), is known only from Argentina. At this time it is impossible to decide if specimens from a more northern population *C. cucullata* invaded the Galápagos Islands only to transform into *C. darwiniana* by genetic drift, or if another species existed along the northern part of the western coast of South America and was ancestral to both *C. cucullata* and *C. darwiniana*; or if *C. darwiniana* has a yet undetected South American population from which it invaded the Galápagos Islands. Regardless of this inability to decide upon the exact ancestry of *C. darwiniana*, its occurrence on these Islands had to result from one or more invasions different from that mentioned above for *C. cytharina* and *C. wolfiana*.

Corythaica cytharina (Butler). A single specimen was collected April 29, 1970, from the plant *Cryptocarpus pyriformis* (family Nyctaginaceae) on Isla Santa Cruz. This record adds a fifth family to the list of plants frequented by this insect.

Genus *Phatnoma* Fieber

The other successful invading lace bug genus, *Phatnoma*, is pantropical and occurs south of the Tropic of Cancer on all major land masses and many of the islands. A South American origin is suggested by the fact that these 2 species of *Phatnoma* on the Galápagos Islands share their critically allying construction of the derived thickened supraclypeal spines and the ancestral and derived features of the delimiting veins of the elytral areas with the South American species *P. maculata* Monte known from Argentina and Brazil. While *P. maculata* is not known to occur along the Pacific Coast, the

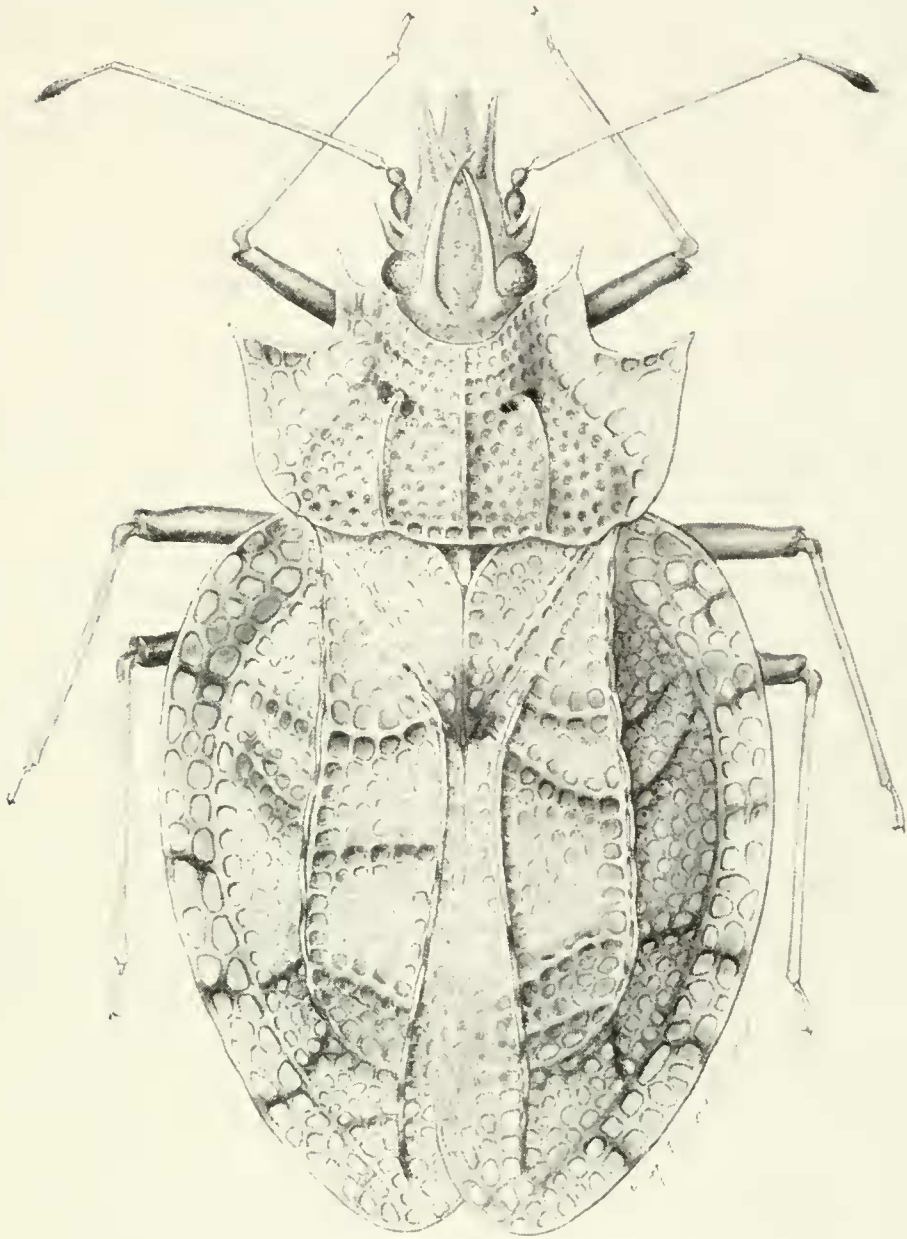


Fig. 1. *Phatnoma biordinatum*, new species, dorsal view.

shared derived structures may be interpreted to indicate a possible descent from a costal population that also gave rise to the common ancestor of the 2 Galápagos species.

Phatnoma biordinatum Froeschner, new species
fig. 1

The presence of but 2 rows of cells on the apical $\frac{3}{4}$ of the costal area (triseriate on basal $\frac{1}{4}$) will separate this species from all others in the genus.

Holotype ♀: Length 2.61 mm, width 1.4 mm. Brachypterous. Dorsal venation tannish yellow, elevated or thickened veins clouded with fuscous; cells hyaline or milky white. Head, most of ventral surface, tibiae and tarsi brownish yellow. Femora and first 2 antennal segments deep reddish brown.

Head with 7 cephalic spines: dorsally with slender horizontal occipitals surpassing eyes by $\frac{1}{2}$ their length, supra-clypeals distinctly thicker than occipitals, decurved, diverging from contiguous bases; anteriorly with 1 long tapering decurved spine on clypeus and on each jugum. Antennal segments: I, 0.06; II, 0.04; III, 0.62; IV, 0.16; 1st pyriform, 2nd globular, 3rd very slender except for thickened base, 4th gradually thickening to apical $\frac{1}{4}$. Labium reaching onto 2nd abdominal sternite.

Pronotum slightly convex, coarsely punctate. Tricarinate; lateral carinae parallel, slightly taller than median carina, terminating anteriorly on calli. Anterior margin broadly concave. Collum wide, not elevated. Paranotum moderately wide, flaring anteriorly, quadriseriate across widest part; anteriorly with 2 strong forward-directed, acute, spine-tipped angles separated by angular emargination. Posterior margin transverse, broadly exposing small, compressed scutellum.

Elytral outline oval. Elytral areas, including clavus, well developed and delimited; limiting veins of discoidal area laminate, with single row of elongate cells, without elevations. Discoidal area 6 cells wide, divided by 3 distinctly elevated transverse veins. Subcostal area oblique, with 7 cells across widest part; divided by 4 distinctly elevated cross veins. Costal area triseriate in basal $\frac{1}{4}$, with 2 mostly regular rows of cells on apical $\frac{3}{4}$. Sutural areas each 4 cells wide, superimposed at rest.

Sternal laminae uniseriate. Median line of abdomen impressed basally.

Holotype ♀: Galápagos Archipelago, Isla Santa Cruz, February 26, 1973, under bark along trail between Academy Bay and Bella Vista, Robert Silberglied, 1 specimen (USNMNH type number 72596).

The close relationship between this new species and *P. eremaeum* Drake and Froeschner [erroneously stated to be described from macropterous individuals], as attested to by the thickened supra-clypeal spines, the absence of elevations on the uniseriately laminate delimiting veins of the elytral areas, and the same island habitat, probably resulted from a common descent from a single ancestral invasion; however, antennal segment III being much thinner in *biordinatum*, the outer row of subcostal cells being distinctly enlarged and in a regular row in *biordinatum*, and costal area being only biseriata on the apical $\frac{3}{4}$ in *biordinatum* are of specific value elsewhere in the family.

REFERENCES

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